BIOPHYSICAL JOURNAL

published monthly for the Biophysical Society
by The Rockefeller University Press
edited by the Biophysical Society in cooperation
with the Division of Biological Physics
of The American Physical Society

Editorial Board

V. ADRIAN PARSEGIAN, *Editor*
ARTHUR S. BRILL, *Associate Editor*
J. W. LONGWORTH, *Associate Editor*
OLAF ANDERSEN
CHARLES P. BEAN
HOWARD C. BERG
FRANCISCO BEZANILLA
VICTOR A. BLOOMFIELD
FLOYD J. BRINLEY, JR.
CHARLES BROKAW
HANS FRAUENFELDER
JOHN HASELGROVE
SANDY HELMAN
PATRICIA JOST
SEYMOUR H. KOENIG
HAROLD LECAR
DAVID MAUZERALL
STUART MCLAUGHLIN
RALPH NOSSAL
WILLIAM PARSON
ANTONIO SCARPA
BENNO P. SCHOENBORN
JANE K. SETLOW
CHARLES F. STEVENS
EDWIN A. TAYLOR
RICHARD W. TSIEN
ROBLEY C. WILLIAMS, JR.

VOLUME 27 NEW YORK 1979

Copyright © 1979 by Biophysical Society

CONTENTS

July 1979 *volume* 27 *number* 1

1 MAGNETIC RESONANCE STUDIES OF THE SPATIAL ARRANGEMENT OF GLUCOSE-6-PHOSPHATE AND CHROMIUM (III)-ADENOSINE DIPHOSPHATE AT THE CATALYTIC SITE OF HEXOKINASE. *Richard L. Petersen and Raj K. Gupta*

15 OPTICAL STUDIES OF THE PHASE BEHAVIOR OF MONODOMAIN SAMPLES OF DIPALMITOYL PHOSPHATIDYLCHOLINE CONTAINING CALCIUM CHLORIDE. *C. D'Ambrosio and L. Powers*

21 COMPUTER SIMULATION OF FLOW-DEPENDENT ABSORPTION IN MICROPERFUSED SHORT HENLE'S LOOP OF RATS. *A. D. Baines, D. Basmadjian, and B. C. Wang*

39 INTERACTIONS BETWEEN QUATERNARY LIDOCAINE, THE SODIUM CHANNEL GATES, AND TETRODOTOXIN. *M. D. Cahalan and W. Almers*

57 BLOCK OF SODIUM CONDUCTANCE AND GATING CURRENT IN SQUID GIANT AXONS POISONED WITH QUATERNARY STRYCHNINE. *M. D. Cahalan and W. Almers*

75 CHANGES IN REPAIR COMPETENCY AFTER 5-BROMODEOXYURIDINE PULSE LABELING AND NEAR-ULTRAVIOLET LIGHT. *M. P. Hagan and M. M. Elkind*

87 NULL SPACE IN THE HODGKIN-HUXLEY EQUATIONS. A CRITICAL TEST. *E. N. Best*

105 PHOTOCHEMISTRY OF RHODOPSIN AND ISORHODOPSIN INVESTIGATED ON A PICOSECOND TIME SCALE. *T. G. Monger, R. R. Alfano, and R. H. Callender*

117 LIGHT SCATTERING VS. MICROSCOPY FOR MEASURING AVERAGE CELL SIZE AND SHAPE. *Paul Latimer*

127 RELATIONSHIP BETWEEN Na^+-DEPENDENT RESPIRATION AND $Na^+ + K^+$-ADENOSINE TRIPHOSPHATASE ACTIVITY IN THE ACTION OF THYROID HORMONE ON RAT JEJUNAL MUCOSA. *Uri A. Liberman, Yasushi Asano, Chu-Shek Lo, and Isidore S. Edelman*

145 NUMERICAL RECONSTRUCTION OF THE QUANTAL EVENT AT NICOTINIC SYNAPSES. *John C. Wathey, Menasche M. Nass, and Henry A. Lester*

August 1979 *volume* 27 *number* 2

165 ELECTROLYTE TRANSPORT ACROSS A SIMPLE EPITHELIUM. STEADY-STATE AND TRANSIENT ANALYSIS. *Alan M. Weinstein and John L. Stephenson*

187 MOTILITY EVALUATION OF HUMAN SPERMATOZOA BY PHOTON CORRELATION SPECTROSCOPY. *R. Finsy, J. Peetermans, and H. Lekkerkerker*

193 MODIFICATIONS OF SODIUM CHANNEL GATING IN *MYXICOLA* GIANT AXONS BY DEUTERIUM OXIDE, TEMPERATURE, AND INTERNAL CATIONS. *C. L. Schauf and J. O. Bullock*

209 ELECTROCHEMICAL PROPERTIES OF Na^+- AND K^+-SELECTIVE GLASS MICROELECTRODES. *Chin Ok Lee*

221 ZEAXANTHIN ([3R,3'R]-β,β-CAROTENE-3-3'DIOL) AS A RESONANCE RAMAN AND VISIBLE ABSORPTION PROBE OF MEMBRANE STRUCTURE. *R. Mendelsohn and R. W. Van Holten*

237 PHOTOINITIATED MEDIATED TRANSPORT OF H_3O^+ AND/OR OH^- ACROSS GLYCEROL MONOOLEATE BILAYERS DOPED WITH MAGNESIUM OCTAETHYLPORPHYRIN. *Roger C. Young and Stephen W. Feldberg*

257 CONDITIONING HYPERPOLARIZATION-INDUCED DELAYS IN THE POTASSIUM CHANNELS OF MYELINATED NERVE. *Ted Begenisich*

267 A SIMPLE CASE OF THE WILSON-COWAN EQUATIONS. *A. Muir*

277 A MATHEMATICAL MODEL FOR THE MOTION OF MECHANORECEPTOR HAIRS IN FLUID ENVIRONMENTS. *Bob L. Henson and Lon A. Wilkens*

287 STRUCTURE OF THE REPLICATION FORK IN ULTRAVIOLET LIGHT-IRRADIATED HUMAN CELLS. *Marila Cordeiro-Stone, Robert I. Schumacher, and Rogerio Meneghini*

301 DO CARDIAC ANEURYSMS BLOW OUT? *Daniel K. Bogen and Thomas A. McMahon*

Brief Communication

317 VOLTAGE TRANSIENTS FROM PHOTO-ISOMERIZING AZO DYE IN BILAYER MEMBRANES. *J. R. Duchek and J. S. Huebner*

September 1979 *volume* 27 *number* 3

325 PHASE BEHAVIOR OF GANGLIOSIDE-LECITHIN MIXTURES. RELATION TO DISPERSION OF GANGLIOSIDES IN MEMBRANES. *Margaret R. Bunow and Barry Bunow*

339 DEUTERIUM MAGNETIC RESONANCE STUDY OF THE GEL AND LIQUID CRYSTALLINE PHASES OF DIPALMITOYL PHOSPHATIDYLCHOLINE. *James H. Davis*

359 AN EFFECT OF ULTRAVIOLET LIGHT ON RNA AND PROTEIN SYNTHESIS IN NONDIVIDING HUMAN DIPLOID FIBROBLASTS. *G. J. Kantor and D. R. Hull*

371 TRANSEPITHELIAL CURRENT-VOLTAGE RELATIONSHIPS OF TOAD URINARY BLADDER AND COLON. ESTIMATES OF E_{Na} AND SHUNT RESISTANCE. *Donald D. Macchia and Sandy I. Helman*

393 ALIGNMENT AND DEFECT STRUCTURES IN ORIENTED PHOSPHATIDYLCHOLINE MULTILAYERS. *Sanford A. Asher and Peter S. Pershan*

423 STRUCTURAL STUDIES OF SYNTHETIC FILAMENTS PREPARED FROM COLUMN-PURIFIED MYOSIN. *Jane F. Koretz*

433 EFFECTS OF C-PROTEIN ON SYNTHETIC MYOSIN FILAMENT STRUCTURE. *Jane F. Koretz*

447 DIFFUSION-CONTROLLED REACTIONS ON SPHERICAL SURFACES. APPLICATION TO BACTERIOPHAGE TAIL FIBER ATTACHMENT. *Victor A. Bloomfield and Stephen Prager*

455 LIGHT-SCATTERING STUDIES OF THE MONOMER-DIMER STATES OF GRAMICIDIN A. *F. Rondelez and J. D. Litster*

Brief Communication

461 ELECTROCHEMICAL HEALING SIMILARITIES BETWEEN ANIMALS AND PLANTS. *W. Gensler*

467 INDEXES TO VOLUME 27